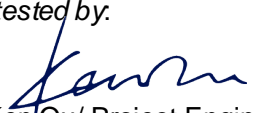



Prüfbericht-Nr.: <i>Test Report No.:</i>	50401178 002	Auftrags-Nr.: <i>Order No.:</i>	170277508	Seite 1 von 12 <i>Page 1 of 12</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	N/A	Auftragsdatum: <i>Order date:</i>	2021-06-29	
Auftraggeber: <i>Client:</i>	AOK Industrial Company Limited Building 1, Shengzouzhi Technology Industrial Park, Shajing Street, Shenzhen City, Guangdong Province, China			
Prüfgegenstand: <i>Test item:</i>	LED Street Light			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	AOK-90WiL02-NV-L3-00-XX70-T201-PH AOK-90WiL02-NV-L5-00-XX70-T202-PH For variables XX denotes the CCT, it can be 30-57 for 3000-5700K			
Auftrags-Inhalt: <i>Order content:</i>	Type examination			
Prüfgrundlage: <i>Test specification:</i>	IES TM-21-11 plus client's special requirements			
Wareneingangsdatum: <i>Date of receipt:</i>	2021-06-29	Detaillierte Fotodokumentation siehe Anlage zu diesem Bericht Detailed photo documentation see appendix to this report		
Prüfmuster-Nr.: <i>Test sample No.:</i>	A003100834-007;008			
Prüfzeitraum: <i>Testing period:</i>	2021-07-26 to 2020-09-09			
Ort der Prüfung: <i>Place of testing:</i>	See following pages			
Prüflaboratorium: <i>Testing laboratory:</i>	TUV Rheinland (Guangdong) Ltd.			
Prüfergebnis*: <i>Test result*:</i>	See following pages			
geprüft von / tested by:		kontrolliert von / reviewed by:		
 2021-09-13 Ken Ou/ Project Engineer		 2021-09-13 Mars Yan / Reviewer		
Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name / Stellung <i>Name / Position</i>
Sonstiges / Other:				
N/A				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition of the test item at delivery:</i>		Prüfmuster vollständig und unbeschädigt <i>Test item complete and undamaged</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report only relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

Copy of marking plate:

N/A

Test item

Description..... : LED Street Light

Trademark : AOK

Model and/or type reference : AOK-90WiL02-NV-L3-00-XX70-T201-PH
AOK-90WiL02-NV-L5-00-XX70-T202-PH
For variables XX denotes the CCT, it can be 30-57 for 3000-5700K
For codes NV denotes 220-240V; L3 denotes 3030 chips; L5 denotes
5050 chips; 00 denotes without sensor; 70 denotes Ra 70; T201 and
T202 denotes beam angle; PH denotes Photocell

Factory..... : AOK Industrial Company Limited

Building 1, Shengzouzhi Technology Industrial Park, Shajing Street,
Shenzhen City, Guangdong Province, China

Rating(s)..... : 220-240V~, 50-60Hz, 90W

Test case verdicts

Test case does not apply to the test object..... : N/A

Test item does meet the requirement : P(ass)

Test item does not meet the requirement : F(ail)

Testing

Date of receipt of test item : See cover page

Date(s) of performance of test..... : See cover page

Summary of testing:

1. As per client's special requirement, the test was conducted under 230V~, 50Hz. Model AOK-90WiL02-NV-L3-00-3070-T201-PH (3000K) and AOK-90WiL02-NV-L5-00-3070-T202-PH (3000K) were selected for the test.

2. Test place:

TUV Rheinland (Guangdong) Ltd.,

Address: No.199 Kezhu Road, Guangzhou Science City, Guangzhou 510663, Guangdong Province P.R. China

3. LED luminaire model and LED specification see below tables.

Luminaire model list:

Model	LED Driver	Rated Input	Rated Power	CCT	Ra	LED
AOK-90WiL02-NV-L3-00-XX70-T201-PH	(Philips) Xi FP 110W 0.3-1.0A SNLDAE 230VC133 sXt	220-240V~, 50-60Hz	90W	3000- 5700K	>70	LUXEO N 3030 2D
AOK-90WiL02-NV-L5-00-XX70-T202-PH	(Philips) Xi FP 110W 0.3-1.0A SNLDAE 230VC133 sXt	220-240V~, 50-60Hz	90W	3000- 5700K	>70	LUXEO N 5050

LED specification:

Type	Manufacturer	Size (mm)	I _F (mA)	V _F (V)	CCT (K)	Viewing angle (°)
LUXEON 3030 2D	Lumileds	3.00x3.00x0.66	120	5.6-6.6	3000-5700K	116
LUXEON 5050	Lumileds	5.00x5.18x0.70	240	23.5-26.5	3000-5700K	116

4. Test result summary as below:

Tested model	Test Result	
AOK-90WiL02-NV-L3-00-XX70-T201-PH	Temperature (°C)	LED Drive Current (mA)
	80.6	97.67
	TM-21 Reported L80 (hours)	
	>72000	
	Temperature for tc of LED driver (°C)	
	88.0	
AOK-90WiL02-NV-L5-00-XX70-T202-PH	Temperature (°C)	LED Drive Current (mA)
	80.3	51.6
	TM-21 Reported L80 (hours)	
	>72000	
	Temperature for tc of LED driver (°C)	
	86.5	

Test Method

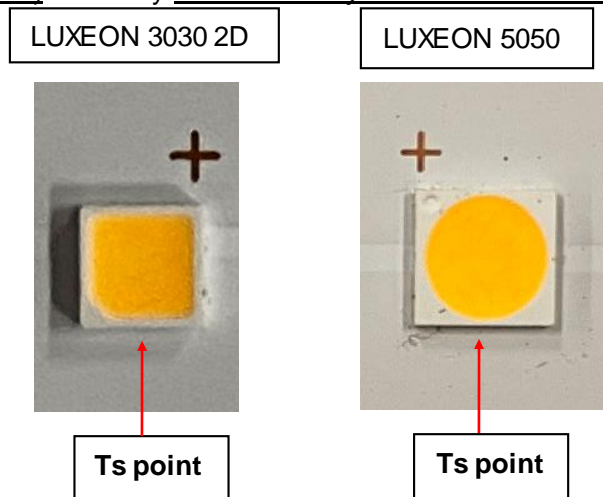
The test was conducted according to ANSI/UL 1598:2008, Section 19, the luminaire shall be installed or supported to simulate intended usage, in accordance with the manufacturer's instructions.

The ambient temperature in which measurements are being taken shall be maintained at $50^{\circ}\text{C} \pm 5^{\circ}\text{C}$.

The apparatus construction followed the description in ANSI/UL 1598 for normal temperature test. Thermocouples were placed on the LED package that the location was indicated by LM-80 report.

The temperatures shall be measured after they have stabilized, when the test has been running for a minimum of 7.5 hours or the test has been running for a minimum of 3 hours and three successive readings taken at 15 min intervals are within 1°C of one another and are not rising.

ISTMT test location according to LM80 report provided by client, for further information please see report no. IESNA LM-80 test report for LUXEON 3030 2D (Jan. 17, 2020) and IESNA LM-80 test report for LUXEON 5050 (Sep. 20 2018) issued by Lumileds Malaysia Sdn. Bhd. Reliability Test Laboratory.



Test Result

Model	AOK-90WiL02-NV-L3-00-3070-T201-PH			
Input Voltage (V)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
230	50	0.389	0.991	88.7
Thermocouple Location	Temperature (°C)		I _F LED Drive Current (mA)	
	Tested Value		Tested Value	LM-80 Limited
LED#1	80.6		97.67	100
LED#2	79.6			
LED#3	79.3			
tc of LED driver	88.0 (limit 85+5 tolerance)			
Ambient	50. 0			

Time (t) at which to estimate lumen maintenance (hours)	50000h	60000h
Lumen maintenance at time (t) (%)	88.38%	86.13%
Calculated L80 (hours)	89000h	89000h
Reported L80 (hours)	>72000h	>72000h

Model	AOK-90WiL02-NV-L5-00-3070-T202-PH			
Input Voltage (V)	Frequency (Hz)	Current (A)	Power Factor	Power (W)
230	50	0.394	0.992	90.0
Thermocouple Location	Temperature (°C)		I _F LED Drive Current (mA)	
	Tested Value		Tested Value	LM-80 Limited
LED#1	80.3		51.6	60
LED#2	79.6			
LED#3	79.2			
tc of LED driver	86.5 (limit 85+5 tolerance)			
Ambient	50.0			

Time (t) at which to estimate lumen maintenance (hours)	50000h	60000h
Lumen maintenance at time (t) (%)	88.27%	85.94%
Calculated L80 (hours)	87000h	87000h
Reported L80 (hours)	>72000h	>72000h

Equipment List

Equip.	Description	Model	Manufacturer	Last Date	Due Date
G1813445	Temperature Room	NA	dongguan jian xin	02.07.2021	02.07.2022
G1812770	Hybrid Recorder	MX100-E-1R	YOKOGAWA	09.10.2020	09.10.2021
G1813477	Power supply-KDF-11005GS(5KVA)	11005GS(5KVA)	APC	NA	NA
G1820330	Digital power Meter	WT333E	YOKOGAWA	07.05.2021	07.05.2022

Appendix: Product Photos

Over view of AOK-90WiL02-NV-L3-00-XX70-T201-PH



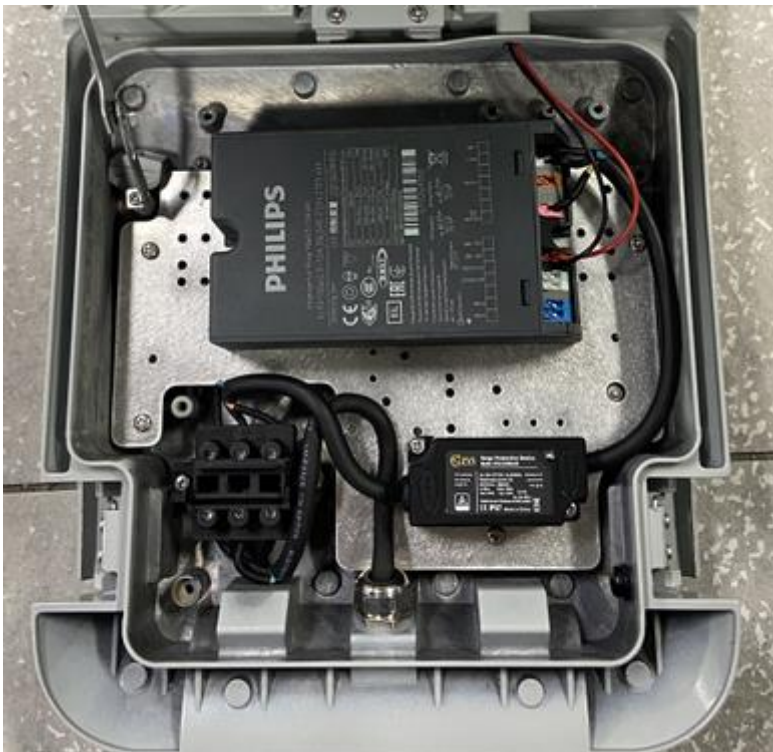
Over view of AOK-90WiL02-NV-L5-00-XX70-T202-PH



Back view of AOK-90WiL02-NV-L3-00-XX70-T201-PH and AOK-90WiL02-NV-L5-00-XX70-T202-PH



internal view of AOK-90WiL02-NV-L3-00-XX70-T201-PH and AOK-90WiL02-NV-L5-00-XX70-T202-PH
(different in LED module)



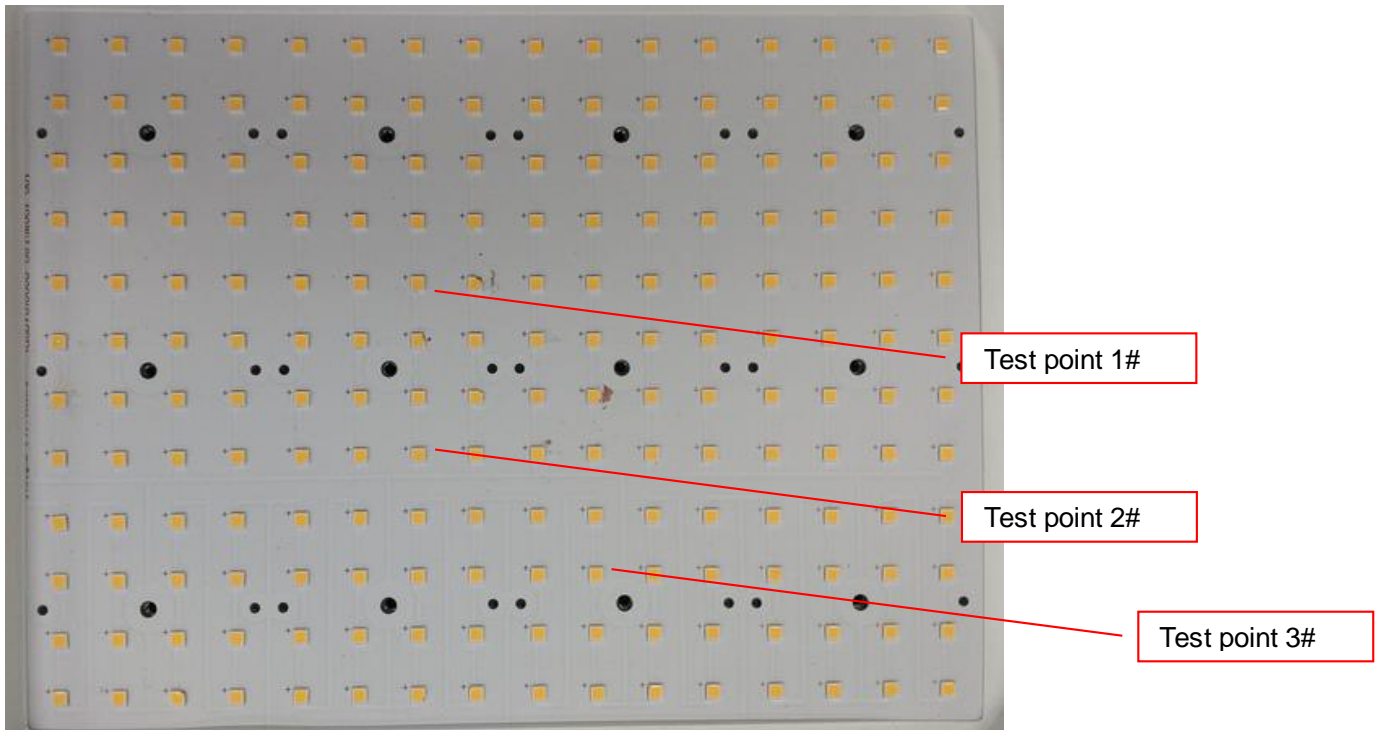
LED driver of AOK-90WiL02-NV-L3-00-XX70-T201-PH and AOK-90WiL02-NV-L5-00-XX70-T202-PH



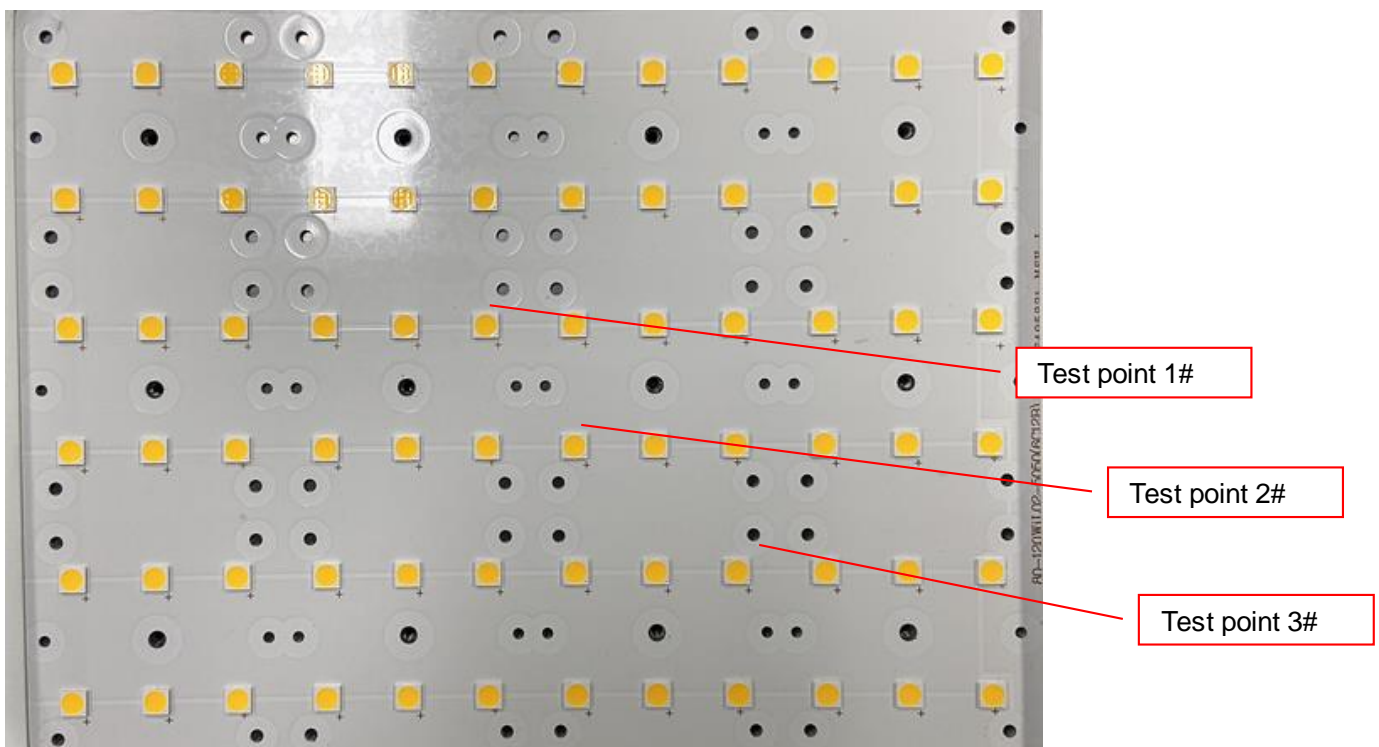
SPD of AOK-90WiL02-NV-L3-00-XX70-T201-PH and AOK-90WiL02-NV-L5-00-XX70-T202-PH



LED module and Ts point view of AOK-90WiL02-NV-L3-00-XX70-T201-PH



LED module and Ts point view of AOK-90WiL02-NV-L5-00-XX70-T202-PH



---End of Test Report---